

Malnutrition and Obesity

Cosmetic and Dermatologic Impacts & Dietary Correction Planning

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The Paradox of Malnutrition and Obesity

Dual Definition

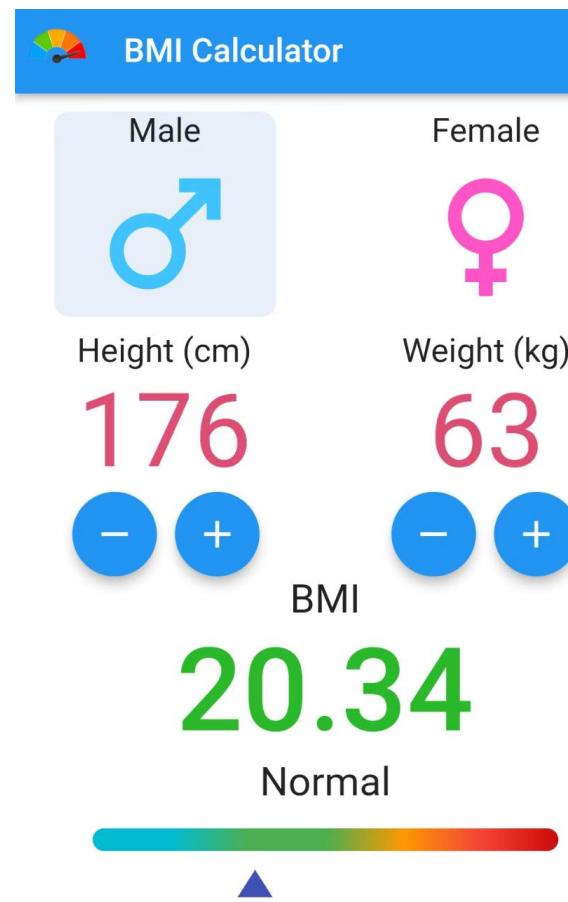
Malnutrition encompasses both undernutrition (insufficient intake) and overnutrition (excessive consumption leading to obesity)

Skin Impact

Both nutritional extremes profoundly compromise skin health, appearance, barrier function, and wound healing capacity

Understanding this paradox is essential for comprehensive dermatologic care and effective dietary intervention strategies.

What is BMI and Why It Matters



The Formula

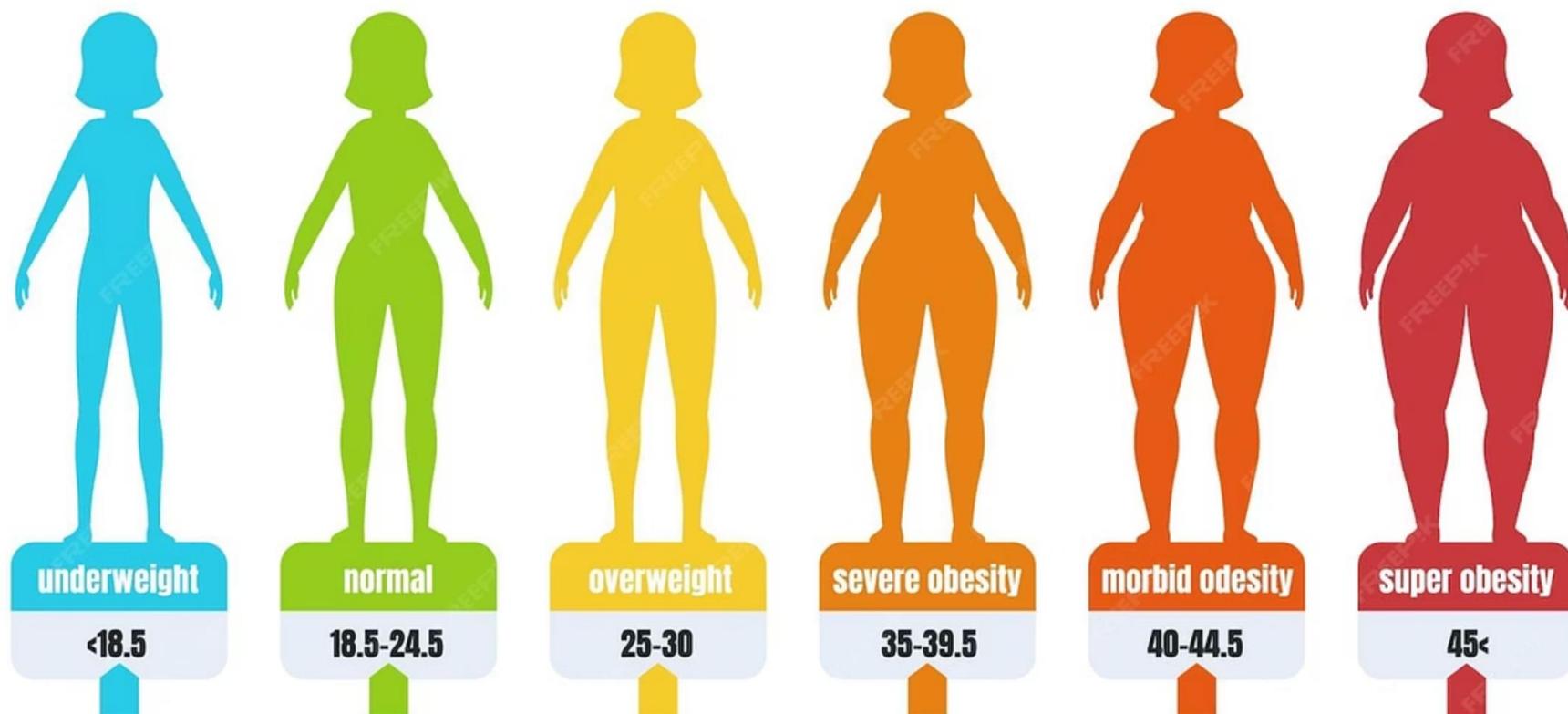
$$\text{BMI} = \text{weight (kg)} \div \text{height (m}^2\text{)}$$

- Under 18.5: malnutrition risk
- 18.5–24.9: healthy weight
- 25–29.9: overweight
- Over 30: obese

This simple screening tool is widely employed across clinical and community settings as an initial assessment of nutritional status.

Important limitation: BMI does not distinguish between fat and muscle mass, requiring clinical judgement alongside measurement.

BODY MASS INDEX



Visual representation of BMI categories and their associated dermatologic manifestations across the spectrum of nutritional status.

Skin Signs of Undernutrition

Dry, Flaky, Thin Skin

Protein and essential fatty acid deficiency impairs lipid barrier formation, leading to xerosis, scaling, and reduced skin thickness with visible fragility.

Delayed Wound Healing

Insufficient nutrients compromise collagen synthesis and cellular proliferation, significantly increasing infection risk and prolonging recovery time.

Hair and Nail Changes

Malnourished patients commonly present with diffuse hair thinning, alopecia, brittle nails with ridging, and reduced growth rates.



Micronutrient Deficiencies Affecting Skin



Vitamin A Deficiency

Presents with xerosis (excessive dryness), follicular hyperkeratosis (rough, bumpy skin), and impaired epithelial differentiation affecting skin integrity.



Zinc Deficiency

Manifests as delayed wound healing, periorificial dermatitis, alopecia, and increased susceptibility to skin infections and inflammation.



Vitamin C Deficiency

Impairs collagen synthesis essential for skin structure, causing easy bruising, petechiae, perifollicular haemorrhage, and poor wound healing.

Recognition of these deficiency patterns enables targeted nutritional intervention and improved dermatologic outcomes.

Obesity's Skin Manifestations



Inflammatory Conditions

Increased risk of psoriasis, acne vulgaris, hidradenitis suppurativa, and other inflammatory dermatoses linked to systemic inflammation.



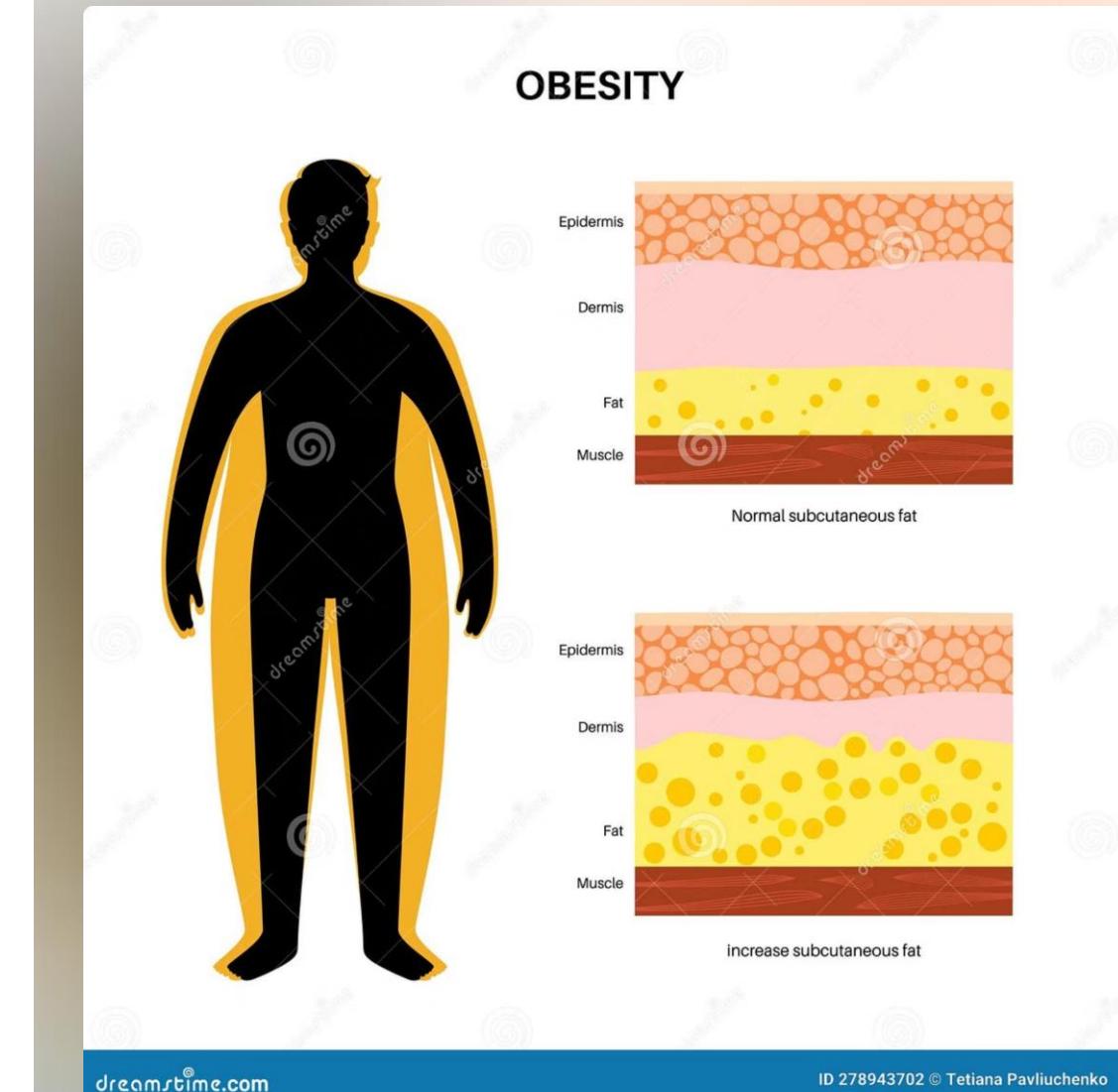
Skin Fold Complications

Intertriginous areas prone to intertrigo, candidiasis, bacterial infections, and maceration due to moisture and friction.



Striae Formation

Stretch marks develop from rapid skin stretching, dermal collagen disruption, and inflammatory mediators associated with adipose expansion.



Diet and Dermatology: The Scientific Link

Dietary Triggers

- High glycaemic index foods stimulate insulin and IGF-1, exacerbating acne severity
- Dairy consumption linked to increased acne prevalence through hormonal mechanisms
- Western dietary patterns promote systemic inflammation

Obesity-Inflammation Axis

- Adipose tissue secretes pro-inflammatory cytokines worsening psoriasis severity
- Weight loss improves treatment response in psoriatic patients
- Systemic steroids for dermatoses can paradoxically increase obesity risk

Understanding these mechanisms enables evidence-based dietary modification as adjunctive dermatologic therapy.

Practical BMI Calculation and Interpretation

O1

Measure Accurately

Obtain weight in kilograms using calibrated scales and height in metres using a stadiometer, with patient barefoot and standing erect.

O3

Interpret Results

Compare calculated BMI against standard categories: underweight (<18.5), normal (18.5–24.9), overweight (25–29.9), obese (≥ 30).

O2

Calculate BMI

Apply the formula: $\text{BMI} = \text{weight (kg)} \div \text{height}^2 (\text{m}^2)$. For example, $70 \text{ kg} \div (1.75 \text{ m})^2 = 22.9 \text{ kg/m}^2$.

O4

Clinical Context

Integrate BMI with physical examination, dietary history, laboratory tests, and muscle mass assessment for comprehensive evaluation.

 **Clinical Pearl:** Suspect malnutrition despite normal BMI when muscle wasting, oedema, or recent unintentional weight loss is present.



Nutritional Strategies for Malnutrition



Increase Energy Density

Enhance calorie and protein intake through fortified foods, frequent small meals, and nutrient-dense snacks throughout the day.



Targeted Supplementation

Employ oral nutritional supplements or enteral nutrition when dietary intake proves insufficient to meet increased metabolic demands.



Address Underlying Causes

Identify and treat dysphagia, chronic illness, medication effects, depression, or social factors impeding adequate nutrition.

Dietary Approaches for Obesity and Skin Improvement

Balanced Nutrition Framework

- Emphasise whole grains, lean proteins, and low-fat dairy products
- Incorporate abundant fruits and vegetables for micronutrients and antioxidants
- Substantially reduce ultraprocessed foods high in saturated fats, refined sugars, and sodium
- Maintain caloric deficit of 500–750 kcal daily for gradual, sustainable weight loss

Behavioural Support

Implement motivational interviewing techniques and practical skill-building for long-term adherence.

Address emotional eating, stress management, and sleep optimisation as integral components.



The 3-3-3 Method for Simplified Macro Tracking

3 Protein Sources

Select three preferred protein options: chicken, fish, eggs, tofu, legumes, Greek yoghurt



3 Fat Sources

Choose three healthy fat sources: olive oil, nuts, avocado, seeds, fatty fish

3 Carbohydrate Sources

Identify three quality carbohydrate staples: oats, quinoa, sweet potato, brown rice, whole grain bread

This simplified approach encourages dietary variety whilst maintaining macronutrient balance, promoting sustainable and enjoyable eating habits adaptable to individual preferences and cultural needs.



Personalising Nutrition for Dermatologic Outcomes

Individual Assessment

Tailor dietary plans to patient's specific skin condition, lifestyle constraints, food preferences, cultural background, and comorbidities.

Mechanistic Considerations

Address gut-skin axis interactions, systemic inflammation markers, oxidative stress, and specific micronutrient deficiencies identified through testing.

Multidisciplinary Collaboration

Coordinate care with registered dietitians, dermatologists, and other specialists to optimise both nutritional status and skin health outcomes.

Personalisation maximises patient engagement, treatment adherence, and ultimately achieves superior dermatologic and overall health outcomes.

Conclusion: Integrating Nutrition and Dermatology for Lasting Skin Health

Dual Nutritional Threats

Both malnutrition and obesity significantly impair skin integrity, appearance, barrier function, and healing capacity through distinct but overlapping mechanisms.

BMI as Screening Tool

Body mass index provides a vital initial screening measure but must be integrated with comprehensive clinical assessment, examination findings, and laboratory investigation.

Evidence-Based Intervention

Targeted dietary correction demonstrably improves dermatologic outcomes whilst enhancing overall health, quality of life, and reducing disease burden.

Patient Empowerment

Equip patients with personalised, sustainable, evidence-based nutrition plans that deliver lifelong benefits for skin health and systemic wellbeing.

